



## IVC-7000 SERIES

**The world's most  
versatile broadcast camera  
system.**



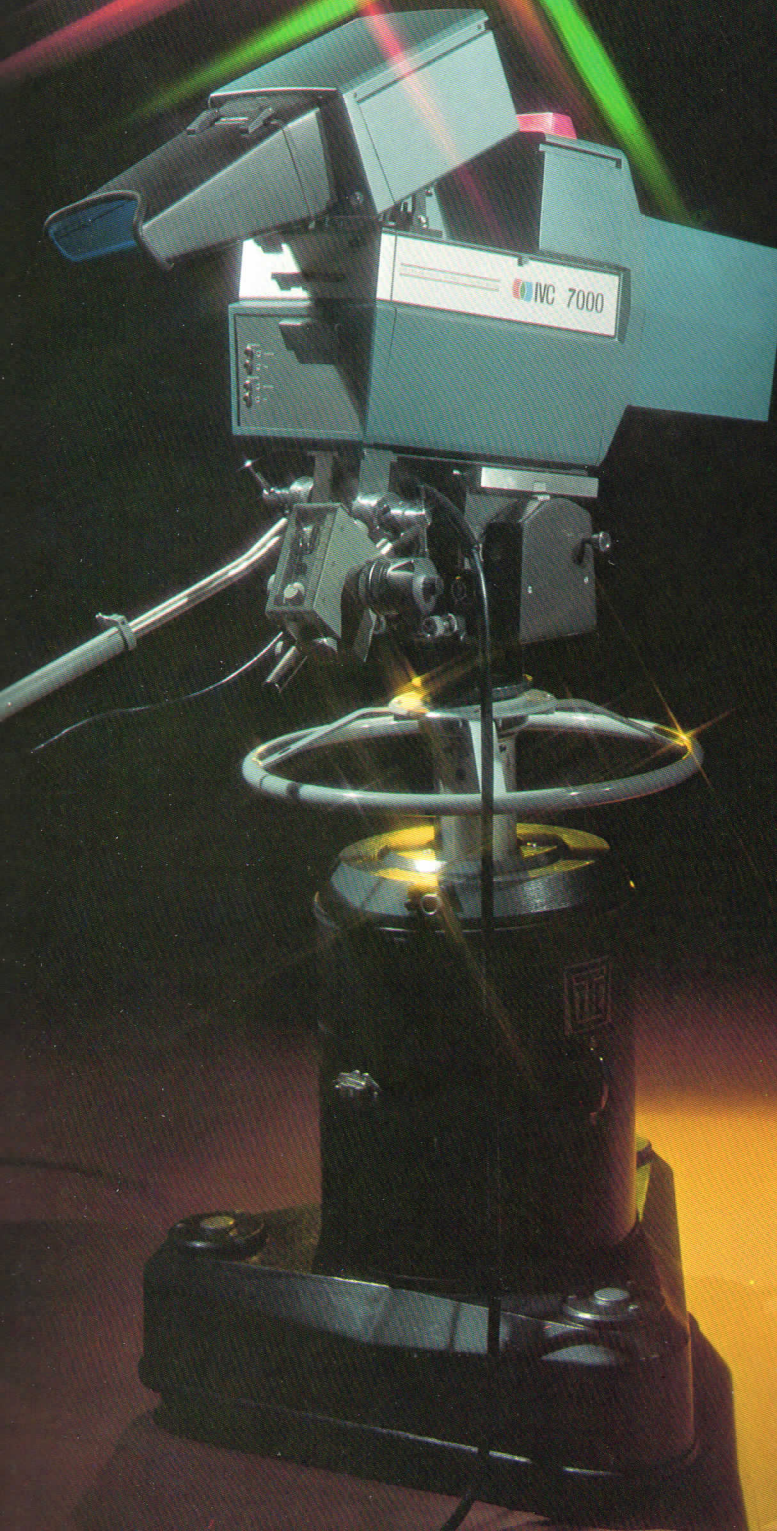


# The IVC-7000. Because there is no substitute for quality.

The 7000 offers the full range of automatic features to give you **total** remote control. It yields razor-sharp images with remarkable color fidelity. It provides great flexibility of operation, even at very low light levels. It eliminates the effect of flare, cuts down lag. It is light and compact.

The 7000 gives you the choice of three cables: standard TV-81, lightweight TV-39, and triax. It gives you the industry's most versatile, most useful viewfinder. It eliminates the irritating little problems associated with conventional wiring harnesses. It is a superb remote camera. It accepts any lens made for the one-inch Plumbicon\* standard, and is made in versions to accommodate all major world color broadcast standards.

The IVC-7000. It ranks among the finest cameras the world has to offer.





# Unrival Pictures.



## Resolution

The 7000's prismatic color-separation system provides direct imaging onto the tube faces—eliminating intermediate field or relay lenses that reduce sharpness. This is one reason for the 7000's excellent resolution: 675 lines center, 600 at the corners. Another factor is the 7000's one-inch separate-mesh tubes—field-proven on hundreds of broadcast cameras around the world—that average 45% modulation at 400 TV lines before enhancement.

## Contour enhancement

This state-of-the-art system includes noise coring and combing. It permits the camera to exceed the amplitude response capability of the pickup tubes, boosting modulation to 100% at 400 TV lines with no significant increase in picture noise.

Select the precise degree of enhancement you want with a continuously variable detail control (also remotable).

An added refinement is the use of two horizontal peaking frequencies. One, at 3.58MHz for NTSC and 4.43MHz for PAL, optimizes picture detail for home receivers; the other, at 5.0MHz, enhances extremely fine details for critical production needs.

## Low-noise pictures

The IVC-7000's signal-to-noise ratio (51dB NTSC; 49dB PAL) is the best in the industry—good enough to give you at least *one additional generation of dubbing* from your videotape masters.

Two basic factors are responsible for the 7000's ultra-quiet pictures: first, video preamplifiers using FETs in an advanced design. Second, the much lower target capacitance of the 7000's one-inch pickup tubes.

## Colorimetry

A broadcast camera that reproduces saturated colors with an average error of 5 or 6 jnd's is considered to have good colorimetry. But the average color error for the 7000 is less than 1.0 jnd—the best for any broadcast color camera. IVC provides a computer-calculated matrix, custom-matched to each prism, to ensure optimum colorimetry

and camera color-matching. You will readily perceive it in flesh tones and in test shots of saturated colors.

This excellent performance is achieved with typical extended-red pickup tubes.

## Sensitivity

A highly efficient f/1.6 prismatic color separation system lets the camera deliver full video level down to 30 footcandles of incident light with an f/1.6 lens at normal gain. Switch-selectable gain boosts of +6dB and +12dB permit the 7000 to operate at full video level down to eight footcandles.

The gain boost system does away with the gray-scale chip chart; the camera maintains precise color balance no matter what the position of the gain switch. And the 7000's low-noise enhancer gives you enhancement even when you reach for that last extra bit of sensitivity.

The camera comes with black level shading controls for elimination of color shading—usually seen when cameras without this feature are operated at low light levels with gain boost and bias light. Provisions for H and V sawtooth and parabola are built in.

When lighting is beyond your control—particularly on remote—the combination of low-noise, low-light performance; fixed color balance; and black shading correction will give you greater control and freedom.

## Lag reduction

Use of bias lighting is the chief reason for the 7000's greatly reduced lag even at five footcandles of incident light. A second factor is the inherently lower capacitance of the one-inch tubes' smaller target—a built-in lag reducer. For remote situations, and for dimly-lit studio mood shots, the 7000 offers real advantages in reduced lag or smear from camera movement.

## Flare correction

Under most lighting conditions, scattered light in the faceplate of the pickup tube causes flare—an undesirable increasing of black level as the iris is opened. An

automatic compensation circuit in the IVC-7000 automatically corrects this effect in each of the three channels independently.

## Switchable RGB/YRB matrixing

RGB matrixing, because of its wide bandwidths, is preferred for keying; YRB delivers crisp pictures all day without registration touch-up. Choose the one you need for any shot with a flick of the switch.

## Crisp registration

To give you the cleanest, most accurate registration possible with today's technology, IVC engineers selected computer-matched yokes. Considered the industry's finest, they deliver superb accuracy.

## Automatic white pulse gain stabilization

Black level is totally unaffected by changes in iris setting and white level is *totally* unaffected by changes in black level with this technique. The video man uses his pedestal control without fear of white clipping (or overmodulation). Video gain remains within 1% from zero to +45°C.

## White and black level color paint controls

To satisfy a producer, to compensate for reflected light, to handle the setting or rising sun—the 7000 includes white and black level color paint controls for the red and blue channels.

Formerly, it was difficult to restore normal color balance after painting without a gray scale chart. But the 7000 includes an ON/OFF pushbutton that *instantly* restores color balance or lets a preset balance be switched in when needed for a troublesome shot.

## Continuously variable gamma correction

Changing gamma often causes a troublesome shift in color balance in many cameras. But the 7000's continuously variable gamma correction lets you set gamma for any special effect or mood shot without concern about color tracking. And when normal camera setup is being performed, it permits gamma matching between cameras with much greater accuracy than step-type controls.



Making it simpler.





### Total remote control

All camera functions are controlled from the CCU—including registration, color balance and even the filter wheel. The only exceptions are yoke rotation and individual tube back-focus, which are used only when a new pickup tube is installed.

The 7000's lightweight cable contains just 39 conductors, and only 32 of these are used. Digitally controlled multiplexing makes it possible. Control pulses are added to the V drive signal on a single coax. The system provides for 48 channels from CCU to head and 16 from head to CCU. A number of channels in each direction are not normally used; they are therefore available for such functions as remote pan and tilt control.

Pulses are decoded and routed to sample-and-hold amplifiers that perform the functions. No motors or mechanical devices are used—except, of course, for the iris and filter wheel drives. The system is proportional; a twist of a control knob produces a directly proportional effect at the camera head.

### The end of heavyweight cable

The digital multiplexing technique brings with it the benefits of smaller, lighter connectors and cable. Because the 7000 uses only 32 conductors, there's no need for heavy cable and its heavy connectors.

The 7000 can utilize three cable systems: TV-81, TV-39 and triax. TV-39 is 0.54" (14mm) in

diameter and can be compensated out to 2100 feet (640m). There is no need to adjust the timing of the video signal on remotes—the 7000 does it automatically. Just plug in the cable length you want.

If you already use standard TV-81, then you can use the TV-39-to-TV-81 adapter and its optional cable compensator board, which permits compensation out to 3000 feet (914 meters).

### Triax option

The IVC-7000 was the first U.S.-manufactured camera to offer a triax option that is *totally* contained within the camera head—not attached externally. The 7000's triax connector replaces the regular TV-39 connector, eliminating all external multi-core cable from the camera head. Using low-loss triax cable, the 7000 can work up to 5000 feet (1524 meters) away from the CCU with no loss in remote functions.

### A remote-controlled filter wheel and lens cap

Part of the IVC-7000's remote-control package is a six-position filter wheel driven by a d.c. motor. A rotary switch at the CCU gives the operator six choices: one clear (studio); two N.D.'s; one 85B; and two 85B/N.D.'s. A separate push-button control puts the filter wheel to work as a lens cap. When the button is pressed a second time, the control system remembers the previous filter command and returns the wheel to the last filter position.

### The convenience of automatic functions

Not just total remote control, but a wide range of automatic systems make the IVC-7000 simpler, more convenient to operate. Consider:

**Automatic color balance.** Black balance takes place automatically every time the lens is capped. Aim the off-air 7000 at a white area in the scene, press the AUTO BAL button, and in about five seconds the camera performs its own white balance. With the camera balanced at both ends of the grey scale, perfect color tracking is assured.

**Other automatic systems**, some of which have already been mentioned: automatic timing pulse advance; automatic flare compensation; a system that maintains color balance automatically when gain boost is switched in; and automatic gain stabilization by means of inserted white pulses.

The plug-in auto iris board is optional. It has flesh-tone priority; any time there is flesh of any shade or color in the scene, the video level is set to expose it correctly. In the absence of fleshtones, the auto iris circuit maintains scene highlights at full output level.

### Extra stability to make it work

The sweep circuits of the 7000 are class A linear circuits. By extensive use of feedback, they provide the greatest stability of

registration presently available—0.1% over 0°—45°C.

The 7000's white pulse gain stabilization technique provides video level stability of 1%, 0°—45°C. This inherent, designed-in stability, combined with YRB matrixing, is unmatched in the industry.

### Simpler setup

Many of the 7000's state-of-the-art systems contribute to a simpler, shorter setup operation. To this basic improvement has been added a built-in video calibration pulse that aids greatly in setup.

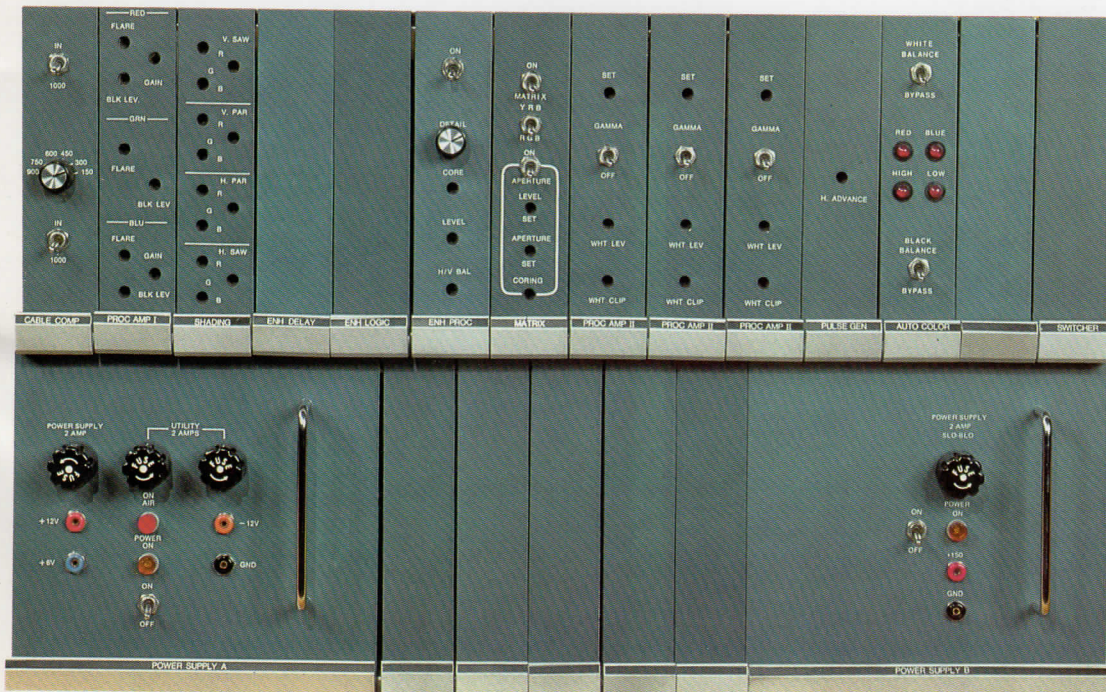
The pulse can be switched into the red, green and blue signal paths to permit checks of gamma tracking and clipping levels. It also permits a quick, accurate check of video signal path performance at any time.

### Compactness: another basic convenience

Another important advantage offered by the IVC-7000's smaller pickup tubes is that they permit a lighter, more compact camera design. The 7000's one-inch (25mm) tubes have enabled IVC engineers to produce a camera that is light (70 pounds/31.8kg without lens) and smaller than almost all others (volume: 2.2 cubic feet/.06 cubic meter).

Combine these size and weight advantages with the 7000's lightweight minicable and with its great stability, and you have a superb remote camera.

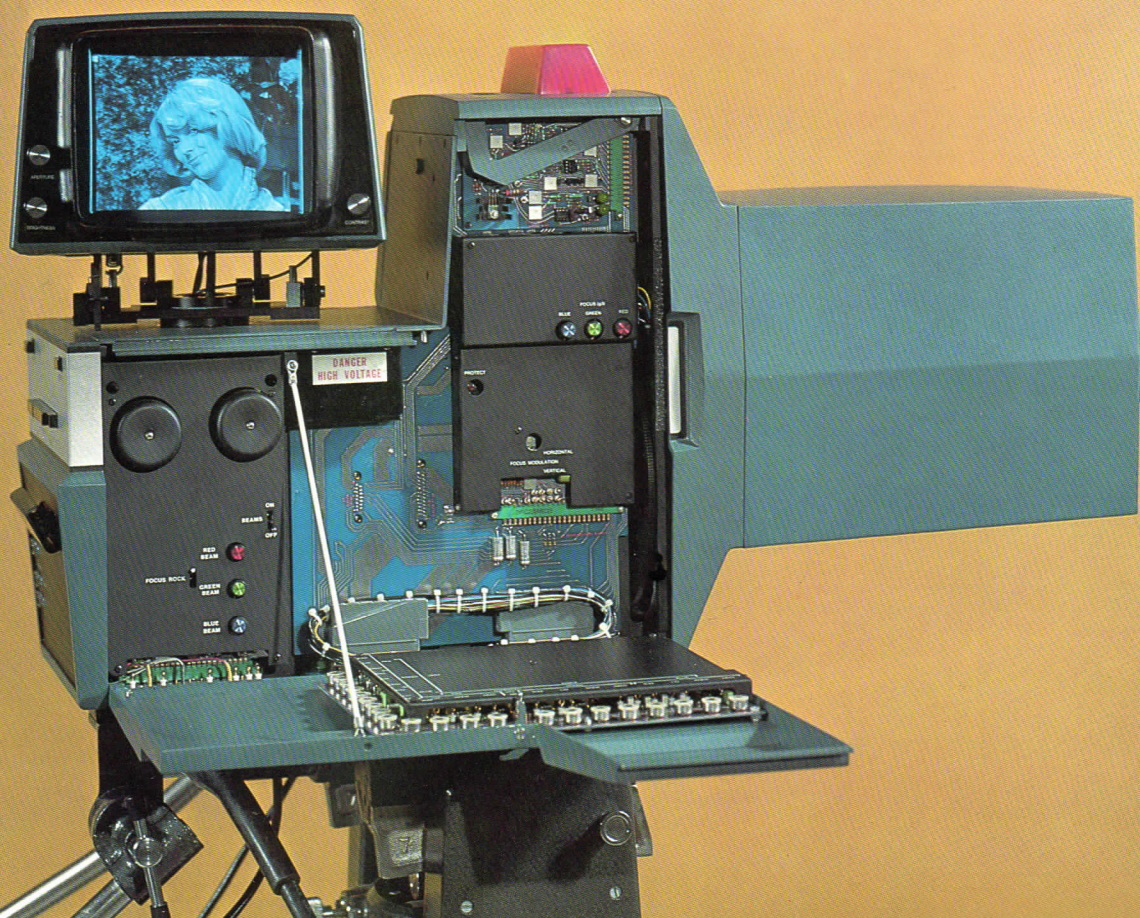
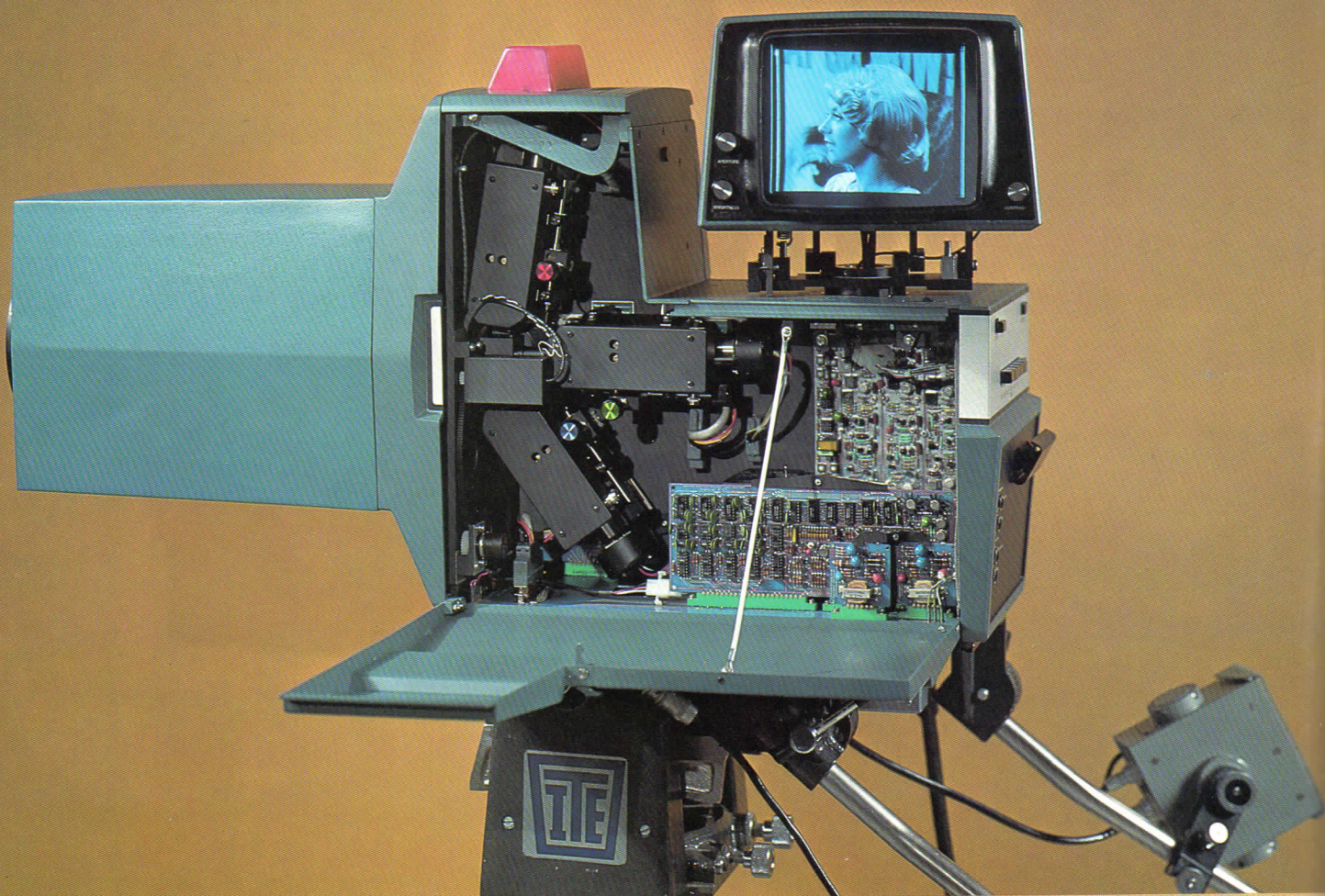
IVC-7000 CCU Electronics and Power Supply



Optional 7000 Joystick RCP









# The industry's most versatile viewfinder.

The viewfinder is bright and sharp, for precise focusing and framing outdoors. It includes both aperture correction and high-peeking to emphasize details and transitions in the picture to make focusing easier.

Not content with making it removable and tiltable, IVC engineers have made it raisable, rotatable, and remotable as well. For every framing situation, this viewfinder makes it more convenient to manipulate the camera to the most favorable angle.

Here are some other significant viewfinder-related features of the 7000:

- ☐ R, G, B, -G, encoded video, and external video display, are switch-selectable at the viewfinder.
- ☐ CCU-to-camera head call by flashing tally lights; camera-to-CCU call by audible signal and flashing lamp.
- ☐ Optional clip-on viewfinder hood for remote work.
- ☐ Viewfinder tally light.
- ☐ Zoom and iris indicators, superimposed on viewfinder video.
- ☐ Two-wire and four-wire intercom systems (available by changing connectors on the intercom boards).
- ☐ Utility AC socket at the rear of the camera.
- ☐ Microphone input at the camera head for effects or for use by a commentator.
- ☐ A cue sheet clip below the viewfinder.

## A broad selection of lenses

The IVC-7000 accepts all lenses designed for the one-inch Plumbicon format—a wide range of manufacturers, focal lengths, and sensitivities.

In fact, more than twenty lenses are available for the 7000 from Angenieux, Canon, Fujinon, Rank and Schneider. They range from the fast f/1.6 10X lenses through 14, 15, 18, 22, 30 and 42X lenses—enough to handle any application.

## Clean, simple, and dependable

You can see at a glance that the IVC-7000 was designed for

maintainability and ease of access. The viewfinder turns at a 90° angle to the camera axis in both directions—so that the picture can face the engineer for initial setup or tube replacement.

Notice how clean and uncluttered the interior of the camera head is. Gone is the jumble of hundreds of wires connecting the circuit boards, yokes, and cable. Gone are unpredictable differences between cameras caused by the varying proximity of wires. Gone are the troubleshooting difficulties caused by broken wires that can't be found.

In the IVC-7000, virtually all the harness has been replaced by printed circuit boards of high reliability. Signals and voltages are easily traced by following printed wires visually.

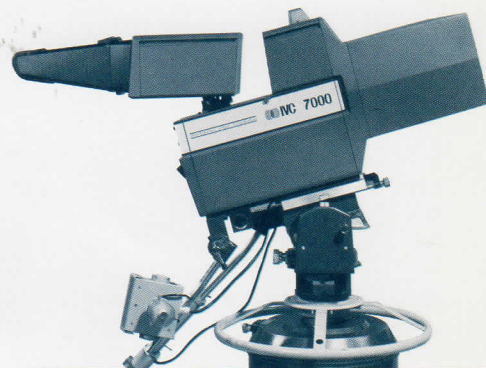
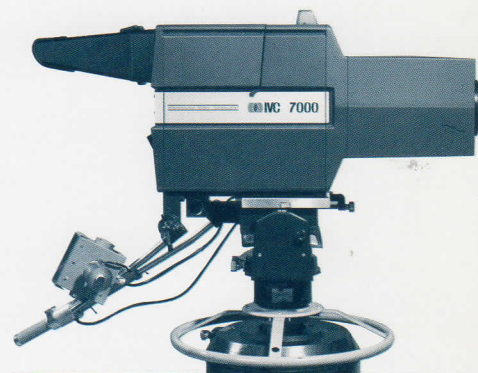
Another area of simplification is in the handling of yoke assemblies; they snap in or out in seconds. The camera can be completely dismantled in ten minutes, and registration after reassembly requires—at the most—a very slight centering adjustment of red or blue. The camera's low-noise preamplifiers are mounted on the yoke assemblies.

Yoke rotation and back-focusing is simplified by the use of individual shafts with large, color-coded knobs.

Here are some other design features aimed at making the 7000 easier to use and maintain: focus rock switch, beams-off switch, built-in hour meter, RGB sequencing, and a built-in calibration pulse that is injected into the video channels to simplify troubleshooting.

## Another advantage of the 7000:

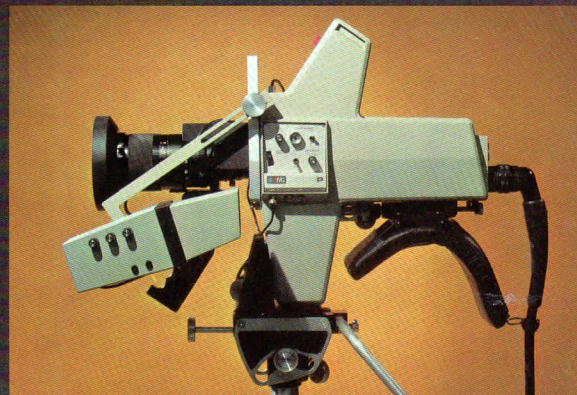
Permanent optical alignment. Three rigid aluminum alloy plates bolt together to form the 7000's rugged backbone structure. It provides a superb optical bed that *never* requires alignment. The prism assembly, the yokes, and the lens are so precisely positioned that realignment is never necessary, even after their removal or replacement.





**IVC-7000P.**

**Light. Comfortable.  
Truly self-contained.  
With the finest picture  
anywhere.**





# No camera at any price...studio or portable...has better performance.

The IVC-7000P is small and light—just over sixteen pounds (7.3 kg.). But by all other standards, it's a heavyweight all the way.

Its output is indistinguishable from the studio version of the same camera—the IVC-7000. Which puts the 7000P into the same class as the world's finest studio cameras, where performance and features are concerned.

The portable version of the 7000 uses the same circuitry, the same prismatic beam splitter, the same top-quality yokes, the same out-

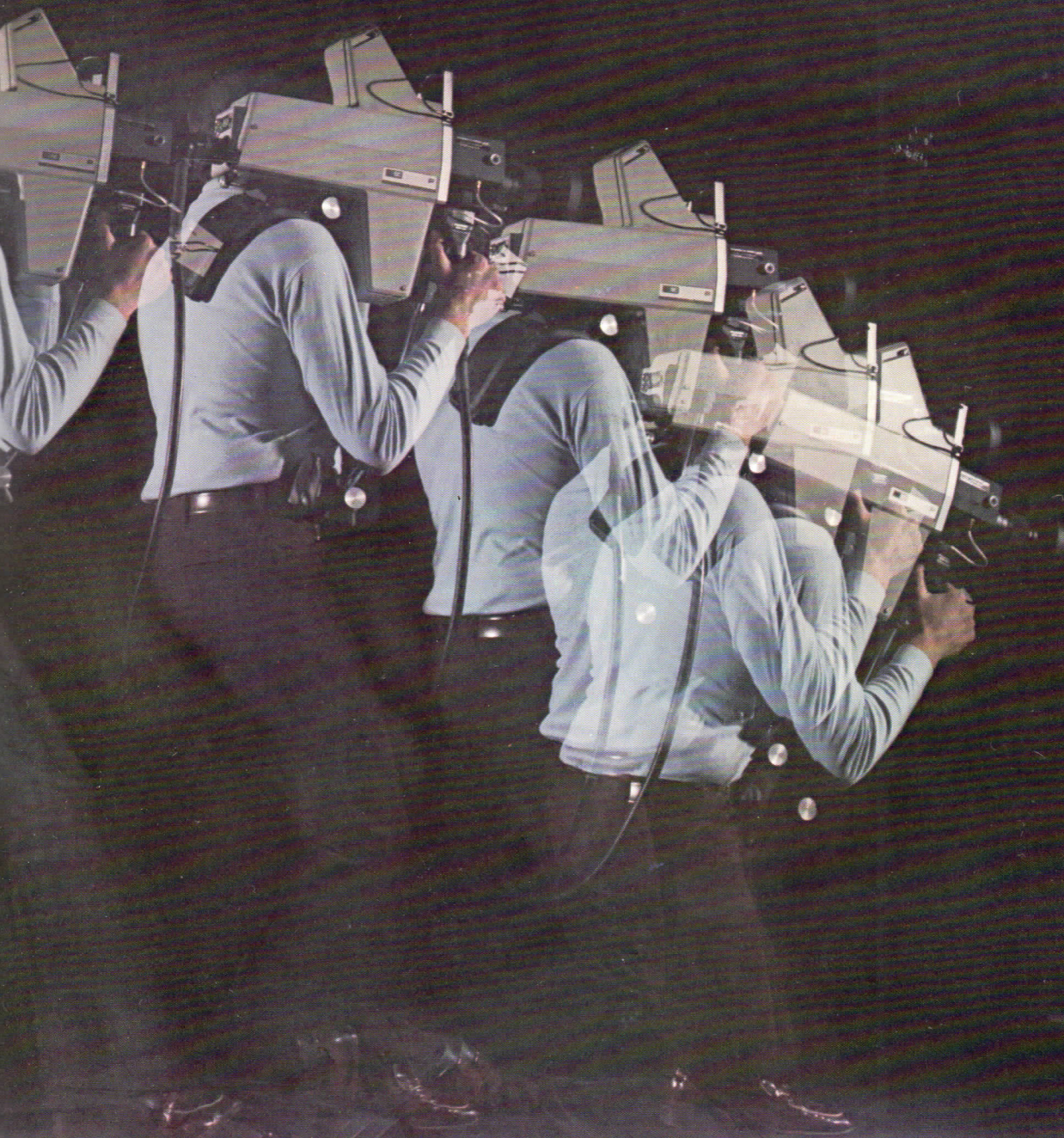
standing contour enhancement, the same automatic features, the same bias lighting, the same one-inch (25mm) Plumbicons as the studio 7000. A glance at its specifications will confirm that the 7000P rivals the finest broadcast studio television cameras in the world.

Yet, with its control pack, the 7000P is totally self-contained and automatic. It includes the full range of automatic features found on the studio version. It can also be operated as a studio camera—with *total* remote

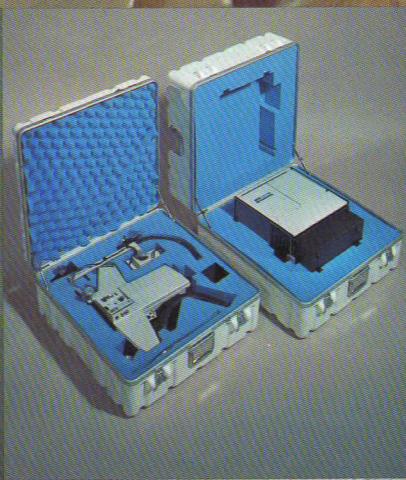
control from a Base Station accessory or (with the Auxiliary Unit) from a standard 7000 control unit (CCU).

The 7000P is designed for easier setup, greater dependability, and simpler maintenance. There is no wiring harness—as in the studio version, a printed-circuit interconnect has replaced it.

From every aspect, the IVC-7000P is an outstanding performer. For the most demanding remote production or for top-quality electronic journalism—it is the instrument of choice.









# Set your cameraman free.

The 7000P needs no CCU. The cameraman leaves the control pack in a convenient spot and roams up to 200 feet (61m) away. He can use it as a backpack with the optional harness if he likes. The 7000P is totally self-contained. It contains the many automatic features of the studio 7000, plus a built-in genlockable sync generator and an encoder. It can be used to start and stop a remote VTR.

The rugged little camera head weighs just over sixteen pounds (7.3kg) plus lens, and it can operate for up to two hours from batteries attached to the control pack. As an alternative, it can operate from standard vehicular battery power the world over. Consumption: just 120 watts. AC power can also be used. Sensitivity is excellent. Stability is superb. And the cameraman has everything going his way.

**The viewfinder does everything.** The three-inch (7.6cm) viewfinder features a very high light output and includes zoom, iris,

and level indications; it can be moved from left to right sides to accommodate right or left-handed operators (since this change turns the viewfinder picture upside down, we've included a sweep reversal switch to bring it right-side-up again). The cameraman can even swivel the viewfinder to the rear of the camera—for tripod operation. And—in normal operation—he can see over and around the camera by turning his head.

**At last: a comfortable portable camera.** The camera head also gives him a comfortable, custom fit: a screw adjustment opens or closes the padded shoulder mount to fit the *thickness* of his shoulder perfectly; a separate adjustment compensates for the *slope* of his shoulder to keep the camera upright and as close to his head as his body configuration will permit. He then slides the camera head fore or aft over the shoulder mount until it is properly balanced. He locks it in that position. A lightweight tubular brace con-

nects the camera head to a wide padded waistband to distribute the weight between his shoulder and waist—and to permit him to take his hands off the camera altogether.

## The ideal one-man camera.

Working alone, the cameraman can initiate black and white automatic color balance; can change the iris setting; can use the black stretch feature when high-contrast outdoor scenes are encountered, and can select 6dB or 12dB added gain. He is backed up by a unique automatic iris that samples elements of the picture—especially flesh tones—to maintain proper video level in rapidly changing natural light. He can use a thumbwheel to operate a four-position filter wheel.

The cameraman can put the control pack on the ground, in a truck, or elsewhere, working up to 200 feet (61m) from it to get right to the action. The Base Station accessory adds an additional 2100 feet (640m) of range.





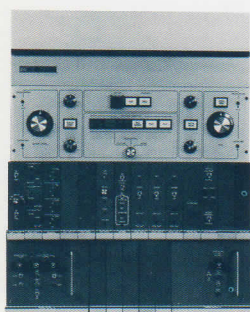
# Typical system configurations

**IVC-7000**  
Multicore



2100' (640m)  
TV-39  
max.

3000' (914.4m)  
TV-81 (Std.)  
max.



7000  
CCU

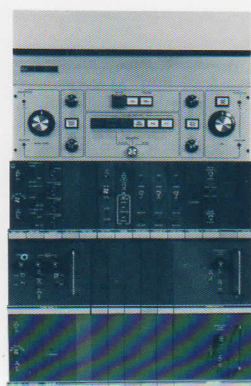


7000  
RCP

**IVC-7000 with Modem**  
Triax



5000' (1524m)  
Triax max.

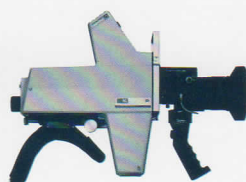


7000  
CCU and  
Modem



7000  
RCP

**IVC-7000P**



200' (61m)  
max.



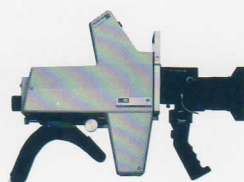
Control  
Pack

1000' (305m)  
max.

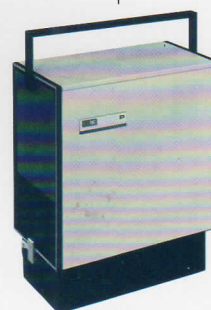


7000P  
RCP

**IVC-7000P**



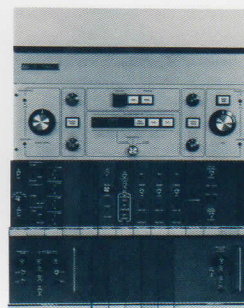
200' (61m)  
max.



Auxiliary  
Unit

2100' (640m)  
TV-39

3000' (914.4m)  
TV-81

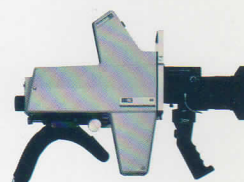


7000  
CCU

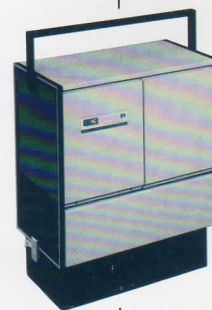


7000  
RCP

**IVC-7000P**



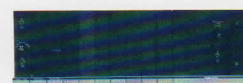
200' (61m)  
max.



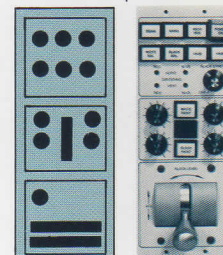
Control  
Pack

2100' (640m)  
TV-39

3000' (914.4m)  
TV-81



Base Station



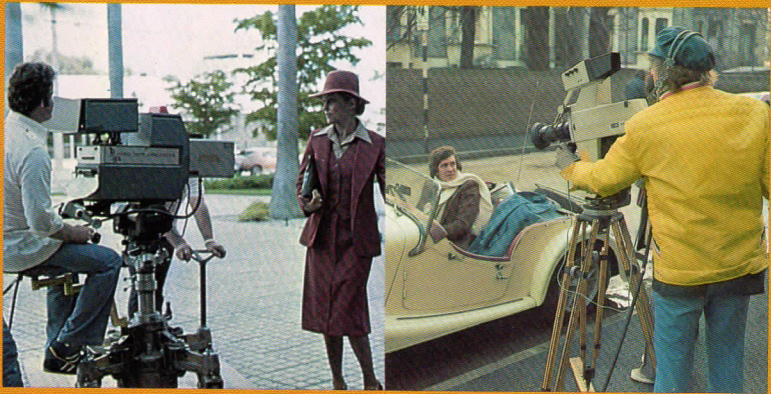
Base Station OCP



# Specifications

<b>SYSTEMS</b> .....	<b>IVC-7000</b> 525 line/60 field NTSC 625 line/50 field PAL 525 line/60 field PAL-M 625 line/50 field SECAM	<b>IVC-7000P</b> 525 line/60 field NTSC 625 line/50 field PAL 525 line/60 field PAL-M 625 line/50 field SECAM
<b>LUMINANCE SIGNAL-TO-NOISE RATIO</b> .. at gamma 1.0 with chroma off and contours off	NTSC: 51dB at 100 f.c., reflectance factor 60%, and f/2.8 iris with 4.2 MHz bandwidth PAL: 49dB at 1000 lux, reflectance factor 60%, and f/2.8 iris with 5.5 MHz bandwidth	NTSC: 51dB at 100 f.c., reflectance factor 60%, and f/2.8 iris with 4.2 MHz bandwidth PAL: 49dB at 1000 lux, reflectance factor 60%, and f/2.8 iris with 5.5 MHz bandwidth
<b>SENSITIVITY</b> .....	1.0 volt peak-to-peak video output at 8 f.c. (80 lux), reflectance factor 60%, and f/1.6 iris with +12dB gain	1.0 volt peak-to-peak video output at 8 f.c. (80 lux), reflectance factor 60%, and f/1.6 iris with +12dB gain
<b>RESOLUTION</b> .....	100% depth of modulation at 400 TV lines with aperture correction on.	100% depth of modulation at 400 TV lines with aperture correction on.
<b>REGISTRATION ACCURACY</b> .....	Zone 1 (circle in center equal to 80% of pict. ht.): 0.06% (25ns) Zone 2 (circle in center equal to 100% of pict. with.): 0.12% (50ns) Zone 3 (area outside Zone 2): 0.25% (100ns)	Zone 1 (circle in center equal to 80% of pict. ht.): 0.06% (25ns) Zone 2 (circle in center equal to 100% of pict. with.): 0.12% (50ns) Zone 3 (area outside Zone 2): 0.25% (100ns)
<b>PICTURE GEOMETRY</b> .....	Zone 1 (see Registration Accuracy): 0.5% Zone 2 (see Registration Accuracy): 1.0% Zone 3 (see Registration Accuracy): 1.5% (Lens errors not taken into account.)	Zone 1 (see Registration Accuracy): 0.5% Zone 2 (see Registration Accuracy): 1.0% Zone 3 (see Registration Accuracy): 1.5% (Lens errors not taken into account.)
<b>ENVIRONMENTAL:</b>		
Operating Temperature Range .....	-20°C to +50°C	-20°C to +50°C
Relative Humidity .....	0-90% maximum (non-condensing)	0-90% maximum (non-condensing)
Stability 0°C - +45°C .....	1% video level, 0.1% registration	1% video level, 0.1% registration
<b>INPUTS:</b>		
Composite Sync .....	4V p-p nominal, negative going	n.a.
Composite Blanking .....	4V p-p nominal, negative going	n.a.
Composite External Video .....	1V p-p	1V p-p
(available monitor input for video switcher)		
Composite Video or Color Black .....	n.a.	1V p-p
(for gen lock)		
<b>POWER</b> .....	117V ±10% 50/60Hz or 234V ±10% 50/60Hz @ 200VA appr.	10.5-15V DC @ 10 amps or 117V ±10% 50/60Hz or 234V ±10% 50/60Hz @ 160VA appr. depending on power pack
<b>OUTPUTS:</b>		
Encoded Video .....	(1) 1V p-p composite video (encoder optional)	(1) 1V p-p composite video (switch-selectable color bars avail- able at control pack and/or base station)
Auxiliary Video .....	(3) Red, Green, Blue 0.7V p-p composite or non-composite video for chroma keyer or external encoder	(3) Red, Green, Blue 0.7V p-p composite or non-composite video for chroma keyer or external encoder. Control pack and aux. unit only
Monitor Video .....	(1) Switched R, G, B, —G encoded or external to (optional) picture monitor	(1) Switched R, G, B, —G encoded or external to (optional) picture monitor
Waveform Video .....	(1) Sequential RGB, superimposed RGB, RG, BG, or picture monitor output	(1) Sequential RGB, superimposed RGB, or picture monitor output Sync, blanking, subcarrier, and burst flag are also available from the internal sync generator
<b>DIMENSIONS AND WEIGHT:</b>		
Camera Head, Excluding Lens:		
length .....	19½ inches*(50cm)	13¾ inches (34.9cm)
height .....	18 inches (45cm)	17 inches (43.2cm)
width .....	11 inches (28cm)	5 inches (12.7cm)
weight .....	70 pounds (31.7kg)	16 pounds (7.3kg)
Control Pack, Excluding Batteries or AC Pack:		
width .....	n.a.	14 inches (35.0cm)
height .....	n.a.	13 inches (33.0cm)
depth .....	n.a.	7¾ inches (19.1cm)
weight .....	n.a.	24 pounds (10.9kg)
Battery or AC Pack:		
width .....	n.a.	12½ inches (30.4 cm)
height .....	n.a.	4¼ inches (10.6 cm)
depth .....	n.a.	6¼ inches (15.6 cm)
weight (AC Pack) .....	n.a.	11 pounds (5.0kg)
weight (DC Pack) .....	n.a.	18 pounds (8.1kg)

Specifications subject to change without notice.







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